

IN THE SPECIFICATION

Please amend the Title on page 1 as follows:

OPTICAL SCANNING DEVICE AND IMAGE FORMING APPARATUS

Please replace the paragraph at page 3, lines 6-15, with the following rewritten paragraph:

As a measure to lower the noise, in general, a cover covering the light deflector is used. In this case, an incident/exit window for allowing a beam to be incident on the light deflector therethrough and also the deflected beam to exit therefrom is covered by a transparent cover such as a glass. Thereby, it is possible to prevent the noise generated by the light deflector from leaking externally. Further, this measure can also be used as a measure to prevent external dust from adhering to the light deflector.

Please replace the paragraph at page 4, lines 7-19, with the following rewritten paragraph:

However, the transparent cover having the ~~functions of~~ soundproof and dustproof functions has a refractive function. Accordingly, when this transparent cover is used, a path of a beam is different in comparison to a case where the same is not used. Thus, a so-called 'floating' occurs. Thereby, it is necessary to employ different layouts of respective optical components between the device using the transparent cover and the device not using the same. Therefore, different optical housings are needed to be provided for the respective devices. However, these different optical housings need different dies for molding them. Accordingly, the development costs increase ~~have up for the development~~.

Please replace the paragraph at page 7, lines 9-19, with the following rewritten paragraph:

A3
As the position of the light-source part and line-image imaging optical system is thus substantially integrally changed, the distance between ~~th~~ the light-source part and light deflector is changed accordingly. When the beam from the light-source part is a divergent beam or a convergent beam, the imaging position at the medium to be scanned in the main scanning directions is changed as the distance between the light-source part and light deflector is changed. Thereby, a problematic situation such as an increase of beam ~~in~~ diameter occurs due to deviation of an imaging position.

Please replace the paragraph at page 7, lines 20-24, with the following rewritten paragraph:

A4
Accordingly, another object of the present invention is to provide an optical scanning device in which, even if the distance between the light-source part and light deflector is changed, deviation of imaging position can be prevented.

Please replace the paragraph at page 9, lines 8-12, with the following rewritten paragraph:

A5
wherein a plurality of holding and fixing ~~datums~~ locations for holding and fixing a light-source part comprising the light source and coupling lens are provided in at least one of the light-source part and optical housing.

Please replace the paragraph at page 9, lines 18-23, with the following rewritten paragraph:

A4 wherein the holding and fixing ~~datums~~ locations are determined so that, by selectably using the holding and fixing ~~datums~~ locations, the beam deflected by the light deflector passes through the scanning and imaging optical system approximately at the same position whether or not the transparent cover member is mounted.

Please replace the paragraph at page 9, line 24, to page 10, line 17, with the following rewritten paragraph:

A7 Thereby, because the plurality of holding and fixing ~~datums~~ locations are provided and are selectably used according to whether or not the transparent cover is mounted, it is possible that the configuration of the optical system and the configuration of the optical housing are used in common between a machine/configuration for high-speed writing using the transparent cover covering the entirety of the light deflector and a machine/configuration for low-speed writing not using the transparent cover. In fact, one of the plurality of ~~datums~~ locations is used for the machine for high-speed writing and the other thereof is used for the machine for low-speed writing. Thereby, it is possible to cancel the influence of the transparent cover member. As a result, it is possible to reduce costs for development of the optical scanning device, and, also, shorten a time therefor. Further, by using the housing in common, only a single die for molding it is needed. Thereby, also costs can be effectively reduced.

Please replace the paragraph at page 19, lines 4-22, with the following rewritten paragraph:

As
The configuration of the optical scanning device shown in FIG. 1 is basically the same whether ~~the~~ the device is used for either high-speed scanning or low-speed scanning. However, when the device is used for high-speed scanning, the light deflector 5 (polygon mirror) is rotated at a relatively high speed, as mentioned above. Accordingly, a zipping sound generated from the high-speed rotation thereof may be a problematic noise, as mentioned above. In order to solve this problem, as shown in FIG. 2, the entirety of the light deflector 5 is covered by a cylindrical cover 13 for the purpose of soundproof. The cover 13 has a window through which the beam to be incident on the light deflector 5 passes and the thus-deflected beam exits from the cover 13. This window is covered by a transparent cover member 14 when the optical scanning device is used for high-speed scanning. Thereby, the noise generated by the light deflector 5 rotating at high speed is prevented from leaking externally.

Please replace the paragraph at page 22, line 18, to page 23, line 4, with the following rewritten paragraph:

A9
In order to shift the light path of the beam coming from the light source toward the light deflector 5 between the case where the cover member 14 is provided and the case where the cover member 14 is not provided, a plurality of ~~datums~~ locations for holding and fixing a light-source part having the light source 1 and coupling lens 2 are provided in the above-mentioned optical housing corresponding to the case where the cover member 14 is provided and the case where the cover member 14 is not provided, respectively, and, an appropriate one of these ~~datums~~ locations is used case by case. A specific example thereof will now be described.

Please replace the paragraph at page 23, line 20, to page 24, line 18, with the following rewritten paragraph:

A10

The pair of pins a1 and a2 and the pair of pins b1 and b2 are used as holding and fixing ~~datums~~ locations for holding and fixing the light-source part 15, respectively. Assuming that the pair of pins a1 and a2 are the holding and fixing ~~eta-um~~ locations for the case where the above-mentioned cover member 14 is not provided, the other pair of pins b1 and b2 are the holding and fixing ~~datum~~ location for the case where the cover member 14 is provided. The pair of pins a1 and a2 and the other pair of pins b1 and b2 are configured so that they do not interfere with one another so that, when one pair thereof are fitted in the corresponding holes so as to fix the light-source part 15 to the optical housing, the other pair do not interfere with it. For this purpose, for example, the positions thereof are determined to be away from each other appropriately, or, a recess or the like is provided for accommodating the other pins. Thus, by providing the plurality of holding and fixing ~~datums~~ locations for the light-source part 15, corresponding to the case where the cover member 14 is provided and the case where the cover member 14 is not provided, respectively, it is possible to prevent shift in imaging position from occurring by appropriately changing the position of the light-source part 15.

Please replace the paragraph at page 24, line ¹⁹~~6~~, to page 25, line 21, with the following rewritten paragraph:

A11

In the configuration shown in FIG. 4, the pair of pins a1 and a2 and the other pair of pins b1 and b2 have been described as the holding and fixing ~~datums~~ locations for the light-source part 15. However, it is also possible that the pair of holes A1 and A2 and the other pair of holes B1 and B2 of the light-source part 15 are holding and fixing ~~datums~~ locations,

1711
instead. When the pair of pins a1 and a2 and the other pair of pins b1 and b2 have been determined as the holding and fixing ~~datums~~ locations, the following configuration is possible: That is, only one pair of holes are provided in the light-source part 15, and, either the pair of pins a1 and a2 or the pair of pins b1 and b2 are selectively fitted in this pair of holes of the light-source part 15. To the contrary, when the pair of holes A1 and A2 and the other pair of holes B1 and B2 are used as the holding and fixing datums, the following configuration is possible: That is, only one pair of pins are in the optical housing, and, either the pair of holes A1 and A2 or the pair of holes B1 and B2 selectively have this pair of pins fitted therein. Thus, the position of the light-source part 15 can be changed. Further, it is also possible that pins are provided on the light-source part 15, and holes, in which the pins are fitted, respectively, are provided in the optical housing, instead. An essential point is that a plurality of holding and fixing ~~datums~~ location are provided in at least one of the light-source part 15 and optical housing.

Please replace the paragraph at page 25, line 22, to page 26, line 22, with the following rewritten paragraph:

A'12
With reference to FIG. 5, shift of imaging position in a sub-scanning directional section between the case where the cover member 14 is provided and the case where the same is not provided will now be illustrated. In FIG. 5, a state indicated by a solid line 1 is a state in which the cover member ~~15~~ 14 is not provided. In this state, a beam from the light-source part is used for imaging a line image long along the main scanning directions on or in the vicinity of the deflection reflective surface 5a through the line-image imaging system 4, and, then, is used for imaging a beam spot on the medium to be scanned 9 through the scanning and imaging system 17 which is a combination of the imaging lens 6 and long-dimensional lens 7. In FIG. 5, a state indicated by a broken line m is a state in which the cover member

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14 is used. In this state, the beam having passed through the line-image imaging system 4 is shifted by the refracting function (floating) of the cover member 14, and, thereby, the line image on or in the vicinity of the deflection reflective surface 9a 5a is shifted toward the medium to be scanned 9 by a distance Δx . Then, by an imaging lateral magnification β of the scanning and imaging system 17 along the sub-scanning directions, the imaging position of the beam is shifted by a distance $\Delta x'$ at the medium to be scanned 9. There,

$$\Delta x' = \Delta x \cdot \beta$$

Please replace the paragraph at page 26, line 25, to page 27, line 19, with the following rewritten paragraph:

A13
Thus, in the sub-scanning directional section, in the case where the cover member 14 is used, in comparison to the case where the cover member 14 is not used, the imaging position is shifted by the distance $\Delta x'$ along the directions of optical axis at the medium to be scanned 9. In order to eliminate this shift of the imaging position, it is necessary to move the line-image imaging system by the distance Δx along the directions of the optical axis. At this time, by providing a configuration such that the light-source part can hold the line-image imaging optical system 4, it is possible to easily deal with the case where the cover member 14 is used and the case where the cover member 14 is not used, by shifting the light-source part and line-image imaging optical system 4 integrally along the directions of the optical axis. In this case, the line-image imaging system 4 is positioned at a ~~datum~~ location position such that the position of the line-image imaging system 4 is optimum with respect to the light-source part.

Please replace the paragraph at page 27, line 20, to page 28, line 18, with the following rewritten paragraph:

A14

FIG. 6 shows a specific example of a configuration such that the line-image imaging system 4 is positioned at a ~~datum~~ location position such that the position of the line-image imaging system 4 is optimum with respect to the light-source part. As shown in FIG. 6, the configuration includes a holding member 16 including a plate-shaped vertical part 16a and a plate-shaped horizontal part 16b integral with the vertical part 16a. The light-source part 15 is mounted on the vertical part 16a. ~~Datum~~ Location supporting parts 16c each having a shape of a quadratic prism are integrally provided on the horizontal part 16b. Surfaces of the ~~datum~~ location supporting parts 16c face a surface of the line-image imaging system 4 at both ends thereof. Further, the line-image imaging system 4 is fixed to the ~~datum~~ location supporting parts 16c as a result of being pressed thereto by a leaf spring or the like, not shown in the figure. Thus, the line-image imaging system 4 is disposed on the holding member 16 onto which the light-source part 15 is also disposed. Thereby, the line-image imaging system 4 is positioned along the directions of the optical axis optimally with respect to the light-source part 15. It is also possible that the line-image imaging system 4 is fixed to the ~~datum~~ location supporting parts 16c by adhesive.

Please replace the paragraph at page 27, line 20, to page 28, line 18, with the following rewritten paragraph:

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FIG. 6 shows a specific example of a configuration such that the line-image imaging system 4 is positioned at a ~~datum~~ location position such that the position of the line-image imaging system 4 is optimum with respect to the light-source part. As shown in FIG. 6, the configuration includes a holding member 16 including a plate-shaped vertical part 16a and a plate-shaped horizontal part 16b integral with the vertical part 16a. The light-source part 15 is mounted on the vertical part 16a. ~~Datum~~ Location supporting parts 16c each having a shape of a quadratic prism are integrally provided on the horizontal part 16b. Surfaces of the

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datum location supporting parts 16c face a surface of the line-image imaging system 4 at both ends thereof. Further, the line-image imaging system 4 is fixed to the datum location supporting parts 16c as a result of being pressed thereto by a leaf spring or the like, not shown in the figure. Thus, the line-image imaging system 4 is disposed on the holding member 16 onto which the light-source part 15 is also disposed. Thereby, the line-image imaging system 4 is positioned along the directions of the optical axis optimally with respect to the light-source part 15. It is also possible that the line-image imaging system 4 is fixed to the datum location supporting parts 16c by adhesive.

Please replace the paragraph at page 35, lines 4-24, with the following rewritten paragraph:

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Actually, the angle θ' between the beam incident on the deflection reflective surface 5a of the light deflector 5 and the beam reflected thereby is smaller by the angle η than the angle θ between the beam incident on the deflection reflective surface 5a of the light deflector 5 and the beam reflected thereby in the case where the cover member 14 is used. That is,

$$\theta' = \theta - \eta$$

Accordingly, in order to cause the beam to be reflected 2 in the direction 'c' parallel to the x-axis, an angle $\epsilon' \leq \epsilon$ between the normal of the deflection reflective surface 5a and the x-axis when the cover member is not used should be such that

$$\epsilon' = \epsilon - (\eta/2)$$

where ϵ denotes an angle between the normal of the deflection reflective surface 5a and the x-axis in the case where the cover member 14 is used.

Please replace the paragraph at page 36, lines 4-20, with the following rewritten paragraph:

A16
Further, the influence by the so-called floating due to the cover member 14 is the same between the case where the light-source part is translated and the case where the direction of the beam emitted from the light-source part is changed, according to whether or not the cover member 14 is used. Accordingly, it is possible that various design requirements such as the position of the line-image imaging optical system 4, parallelity of the beam emitted from the light-source part and so forth are the same as those in the case where the light-source part is translated. Further, a plurality of holding and fixing ~~datums~~ locations of the light-source part are provided so as to deal with the case where the cover member 14 is used and the case where the cover member 14 is not used, for the purpose of appropriately changing the direction of the beam incident on the light deflector 5 as mentioned above.

Please replace the paragraph at page 61, lines 1-19, with the following rewritten paragraph:

ABSTRACT OF THE DISCLOSURE

A17
A coupling lens couples a beam emitted from a light source. A light deflector deflects the beam from the coupling lens at a uniform angular velocity. A line-image imaging optical system is disposed between the coupling lens and light deflector, and causes the beam to image a line image long along main scanning directions on or in the vicinity of a deflection reflective surface of the light deflector. A scanning and imaging optical system causes the beam deflected by the light deflector to image a beam spot on a medium to be scanned. In an optical housing, the light source, coupling lens, light deflector, line-image imaging optical system and scanning and imaging optical system are disposed, and contained. A plurality of holding and fixing ~~datums~~ locations are provided for holding and fixing a light-source part including the light source and coupling lens is provided in at least one of the light-source part and optical housing.
